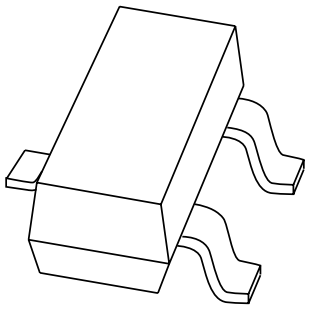
查询PBSS5160T供应商

DATA SHEET



PBSS5160T

60 V, 1 A

PNP low V_{CEsat} (BISS) transistor

Product specification
Supersedes data of 2003 Jun 23

2004 May 27

Philips
Semiconductors

PHILIPS

60 V, 1 A PNP low V_{CEsat} (BISS) transistor

PBSS5160T

FEATURES

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability: I_C and I_{CM}
- High efficiency, reduces heat generation
- Reduces printed-circuit board area required
- Cost effective replacement for medium power transistors BCP52 and BCX52.

APPLICATIONS

- Major application segments:
  - Automotive
  - Telecom infrastructure
  - Industrial.
- Power management:
  - DC-to-DC conversion
  - Supply line switching.
- Peripheral driver:
  - Driver in low supply voltage applications (e.g. lamps and LEDs)
  - Inductive load driver (e.g. relays, buzzers and motors).

DESCRIPTION

PNP low V_{CEsat} transistor in a SOT23 plastic package.
NPN complement: PBSS4160T.

MARKING

TYPE NUMBER	MARKING CODE(1)
PBSS5160T	U6*

Note

1. * = p: made in Hong Kong
   * = t: made in Malaysia
   * = W: made in China.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	–60	V
I_C	collector current (DC)	–1	A
I_{CM}	peak collector current	–2	A
R_{CEsat}	equivalent on-resistance	330	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

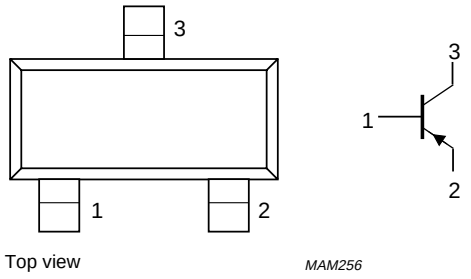


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS5160T	–	plastic surface mounted package; 3 leads	SOT23

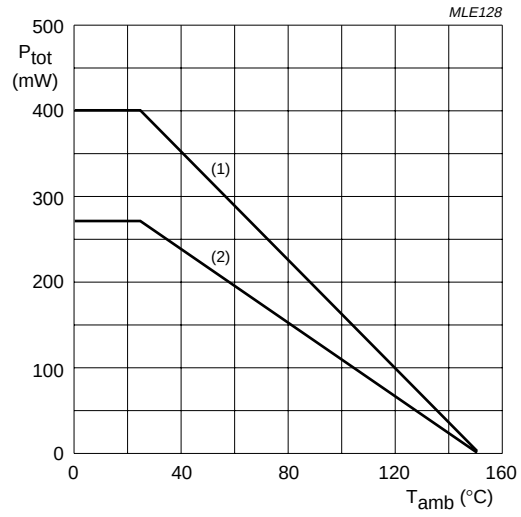
LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	–80	V
V_{CEO}	collector-emitter voltage	open base	–	–60	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)	note 1	–	–0.9	A
		note 2	–	–1	A
I_{CM}	peak collector current	t = 1 ms or limited by $T_{j(max)}$	–	–2	A
I_B	base current (DC)		–	–300	mA
I_{BM}	peak base current	$t_p \leq 300$ μs; $\delta \leq 0.02$	–	–1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C;			
		note 1	–	270	mW
		note 2	–	400	mW
		notes 1 and 3	–	1.25	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Notes

1. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and 1 cm^2 collector mounting pad.
3. Operated under pulsed conditions: duty cycle $\delta \leq 20$ %, pulse width $t_p \leq 10$ ms.



(1) Device mounted with 1 cm^2 collector tab.
(2) Device mounted on standard footprint.

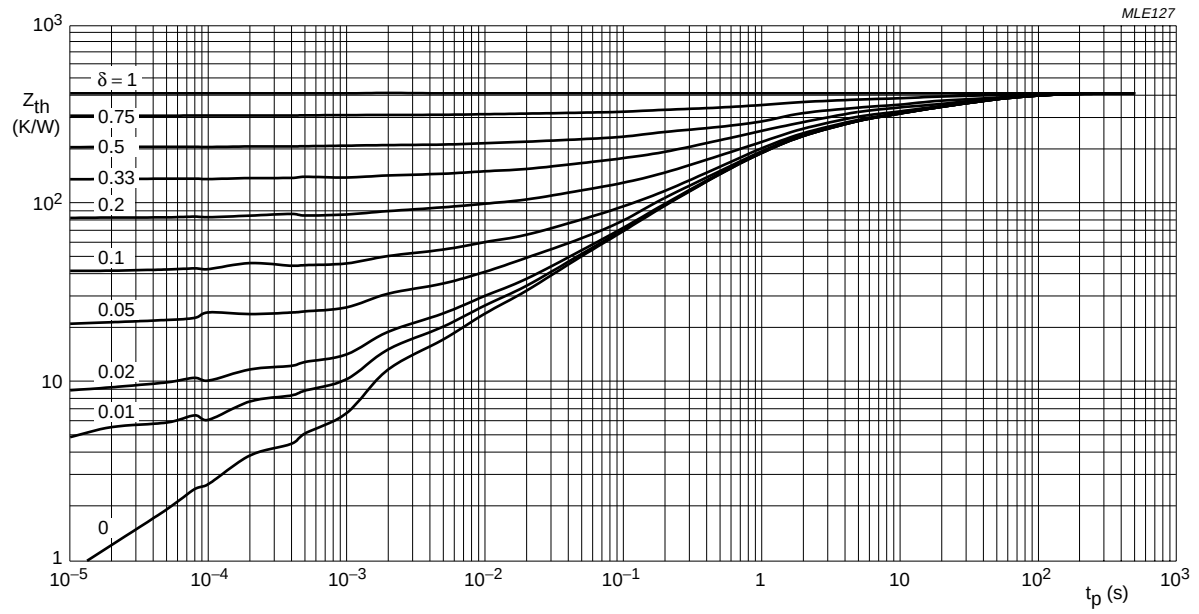
Fig.2 Power derating curves.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air; note 1	465	K/W
		in free air; note 2	312	K/W
		in free air; notes 1 and 3	100	K/W

Notes

1. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and 1 cm^2 collector mounting pad.
3. Operated under pulsed conditions: duty cycle $\delta \leq 20$ %, pulse width $t_p \leq 10$ ms.



Mounted on printed-circuit board; standard footprint.

Fig.3 Transient thermal impedance as a function of pulse time; typical values.

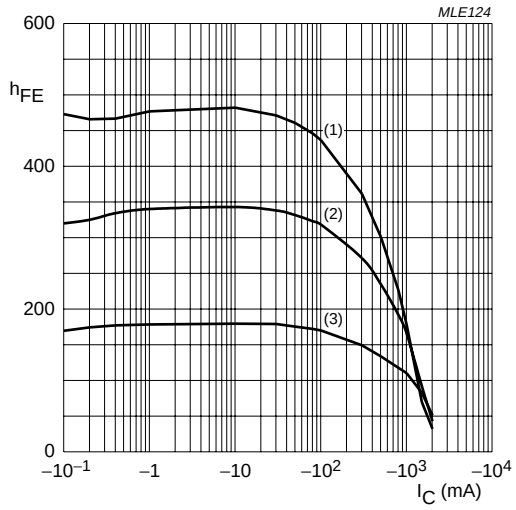
CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	V_{CB} = –60 V; I_E = 0 A	–	–	–100	nA
		V_{CB} = –60 V; I_E = 0 A; T_j = 150 °C	–	–	–50	µA
I_{CES}	collector-emitter cut-off current	V_{CE} = –60 V; V_{BE} = 0 V	–	–	–100	nA
I_{EBO}	emitter-base cut-off current	V_{EB} = –5 V; I_C = 0 A	–	–	–100	nA
h_{FE}	DC current gain	V_{CE} = –5 V; I_C = –1 mA	200	350	–	
		V_{CE} = –5 V; I_C = –500 mA; note 1	150	250	–	
		V_{CE} = –5 V; I_C = –1 A; note 1	100	160	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = –100 mA; I_B = –1 mA	–	–110	–160	mV
		I_C = –500 mA; I_B = –50 mA	–	–120	–175	mV
		I_C = –1 A; I_B = –100 mA; note 1	–	–220	–330	mV
V_{BEsat}	base-emitter saturation voltage	I_C = –1 A; I_B = –50 mA	–	–0.95	–1.1	V
R_{CEsat}	equivalent on-resistance	I_C = –1 A; I_B = –100 mA; note 1	–	220	330	mΩ
V_{BEon}	base-emitter turn-on voltage	V_{CE} = –5 V; I_C = –1 A	–	–0.82	–0.9	V
f_T	transition frequency	I_C = –50 mA; V_{CE} = –10 V; f = 100 MHz	150	220	–	MHz
C_c	collector capacitance	V_{CB} = –10 V; I_E = I_e = 0 A; f = 1 MHz	–	9	15	pF

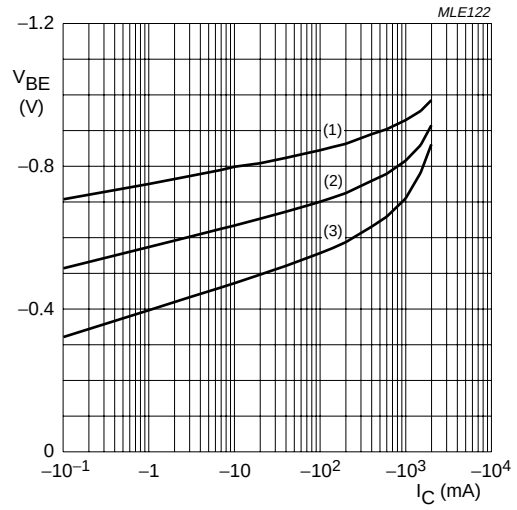
Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.



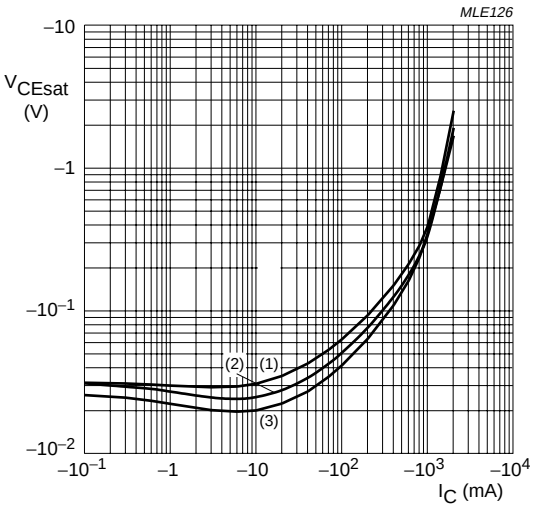
V_{CE} = –5 V.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.4 DC current gain as a function of collector current; typical values.



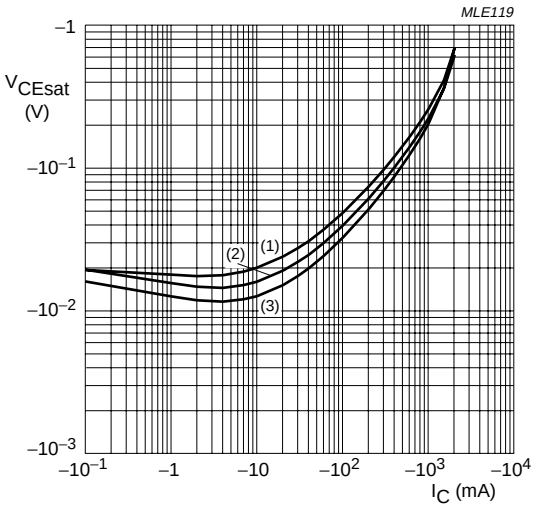
V_{CE} = –5 V.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 100 °C.

Fig.5 Base-emitter voltage as a function of collector current; typical values.



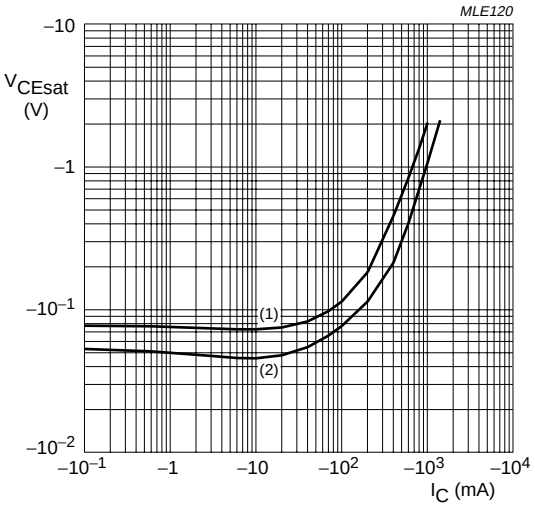
I_C/I_B = 20.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.6 Collector-emitter saturation voltage as a function of collector current; typical values.



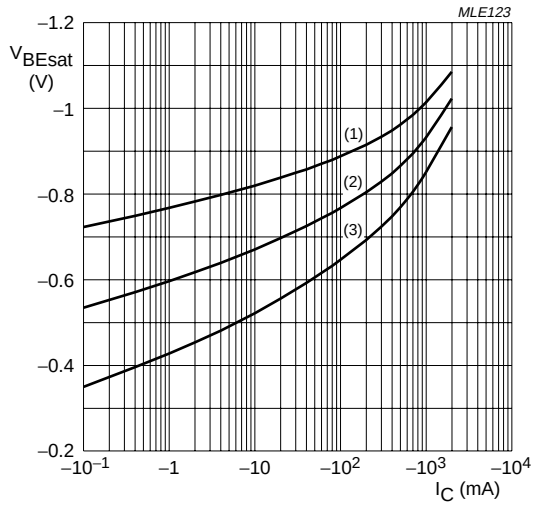
I_C/I_B = 10.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

Fig.7 Collector-emitter saturation voltage as a function of collector current; typical values.



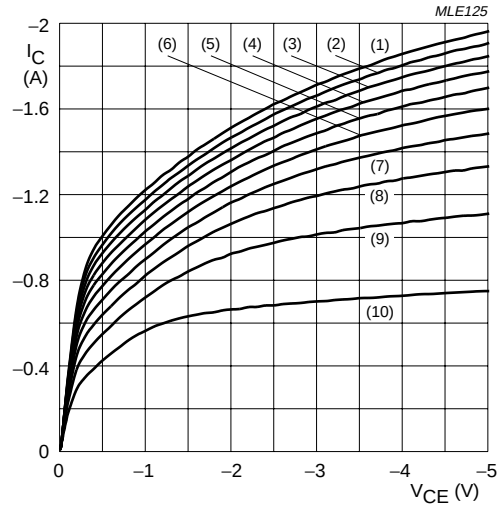
T_{amb} = 25 °C.
(1) I_C/I_B = 100.
(2) I_C/I_B = 50.

Fig.8 Collector-emitter saturation voltage as a function of collector current; typical values.



I_C/I_B = 20.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 100 °C.

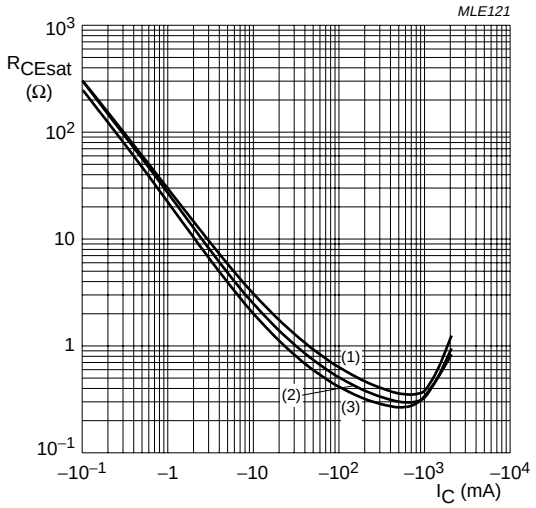
Fig.9 Base-emitter saturation voltage as a function of collector current; typical values.



T_{amb} = 25 °C.

(1) I_B = −40 mA.
(2) I_B = −36 mA.
(3) I_B = −32 mA.
(4) I_B = −28 mA.
(5) I_B = −24 mA.
(6) I_B = −20 mA.
(7) I_B = −16 mA.
(8) I_B = −12 mA.
(9) I_B = −8 mA.
(10) I_B = −4 mA.

Fig.10 Collector current as a function of collector-emitter voltage; typical values.



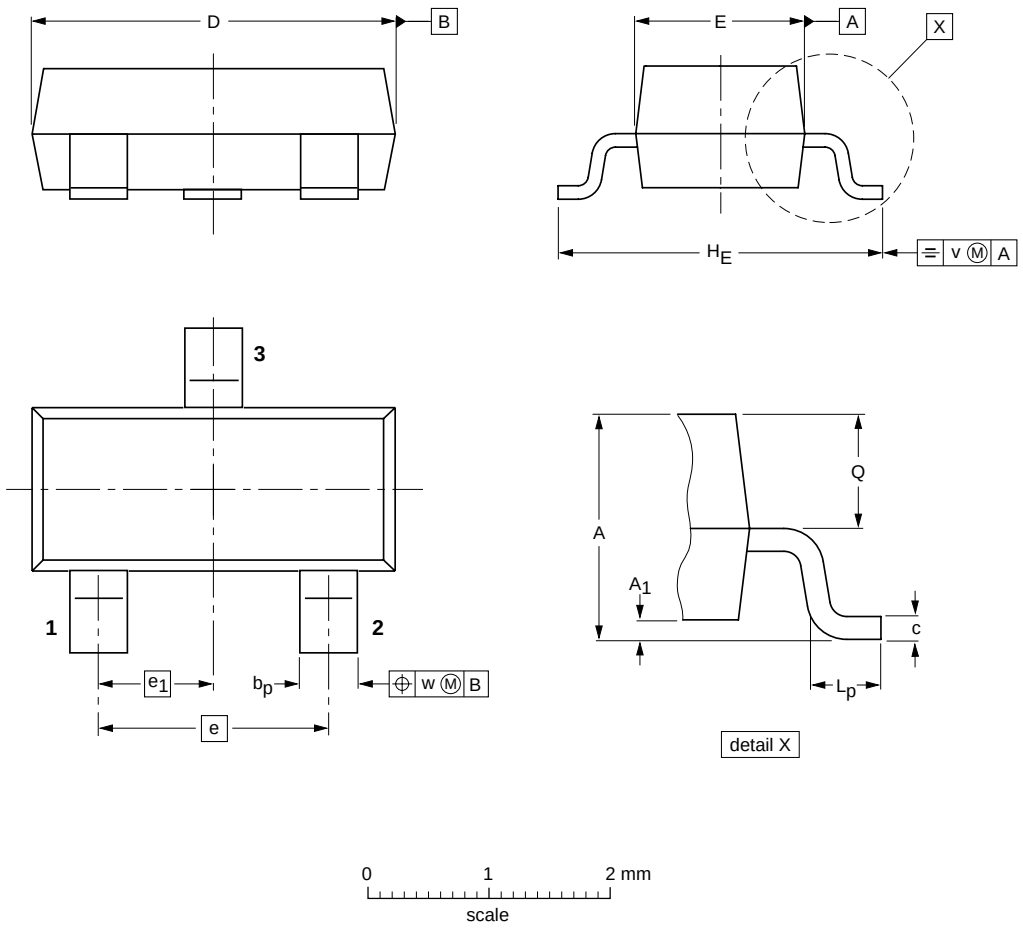
I_C/I_B = 20.

(1) T_{amb} = 100 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = −55 °C.

Fig.11 Equivalent on-resistance as a function of collector current; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

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LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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